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1 Link analysis: Sic transit gloria telae: towards an understanding of the web's decay

Ziv Bar-Yossef, Andrei Z. Broder, Ravi Kumar, Andrew Tomkins

May 2004 **Proceedings of the 13th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(248.69 KB) Additional Information: full citation, abstract, references, index terms

The rapid growth of the web has been noted and tracked extensively. Recent studies have however documented the dual phenomenon: web pages have small half lives, and thus the web exhibits rapid death as well. Consequently, page creators are faced with an increasingly burdensome task of keeping links up-to-date, and many are falling behind. In addition to just individual pages, collections of pages or even entire neighborhoods of the web exhibit significant *decay*, rendering them less effect ...

Keywords: 404 return code, dead links, link analysis, web decay, web information retrieval

2 Automated techniques for managing collections: Managing distributed collections: evaluating web page changes, movement, and replacement

Zubin Dalal, Suvendu Dash, Pratik Dave, Luis Francisco-Revilla, Richard Furuta, Unmil Karadkar, Frank Shipman

June 2004 **Proceedings of the 4th ACM/IEEE-CS joint conference on Digital libraries**

Publisher: ACM Press

Full text available: pdf(329.43 KB) Additional Information: full citation, abstract, references, citings, index terms

Distributed collections of Web materials are common. Bookmark lists, paths, and catalogs such as Yahoo! Directories require human maintenance to keep up to date with changes to the underlying documents. The Walden's Paths Path Manager is a tool to support the maintenance of distributed collections. Earlier efforts focused on recognizing the type and degree of change within Web pages and identifying pages no longer accessible. We now extend this work with algorithms for evaluating drastic changes ...

Keywords: change detection, collection management, document location

3 Ubiquitous WWW: Implementing physical hyperlinks using ubiquitous identifier resolution

Tim Kindberg
May 2002 **Proceedings of the 11th international conference on World Wide Web**
Publisher: ACM Press

Full text available: pdf(400.83 KB) Additional Information: full citation, abstract, references, citings, index terms

Identifier resolution is presented as a way to link the physical world with virtual Web resources. In this paradigm, designed to support nomadic users, the user employs a handheld, wirelessly connected, sensor-equipped device to read identifiers associated with physical entities. The identifiers are resolved into virtual resources or actions related to the physical entities - as though the user 'clicked on a physical hyperlink'. We have integrated identifier resolution with the Web so that it ca ...

Keywords: identifier resolution, mobile computing, nomadic computing, physical hyperlinks, ubiquitous computing

4 Hypermedia systems: Storm: using P2P to make the desktop part of the web

Benja Fallenstein, Tuomas J. Lukka, Hermanni Hyytiälä, Toni Alatalo
August 2003 **Proceedings of the fourteenth ACM conference on Hypertext and hypermedia**
Publisher: ACM Press
Full text available: pdf(36.49 KB) Additional Information: full citation, abstract, references, index terms

We present Storm, a storage system which unifies the desktop and the public network, making Web links between desktop documents more practical. Storm assigns each document a permanent unique URI when it is created. Using peer-to-peer technology, we can locate documents even though our URIs do not include location information. Links continue to work unchanged when documents are emailed or published on the network. We have extended KDE to understand Storm URIs. Other systems such as GNU Emacs are ...

Keywords: content addressable networks, dangling links, location-independent identifiers, peer-to-peer

5 1a—Links and Navigation: The look of the link - concepts for the user interface of extended hyperlinks

Harald Weinreich, Hartmut Obendorf, Winfried Lamersdorf
September 2001 **Proceedings of the twelfth ACM conference on Hypertext and Hypermedia**
Publisher: ACM Press

Full text available: pdf(307.01 KB) Additional Information: full citation, abstract, references, citings, index terms

The design of hypertext systems has been subject to intense research. Apparently, one topic was mostly neglected: how to visualize and interact with link markers.

This paper presents an overview of pragmatic historical approaches, and discusses problems evolving from sophisticated hypertext linking features. Blending the potential of an XLink-enhanced Web with old ideas and recent GUI techniques, a vision for browser link interfaces of the future is being developed. We hope to stimula ...

Keywords: Web, XLink, distributed hypertext, link marker, user interface

6 Web Information Retrieval: Analysis of lexical signatures for finding lost or related

documents
Seung-Taek Park, David M. Pennock, C. Lee Giles, Robert Krovetz
August 2002 **Proceedings of the 25th annual international ACM SIGIR conference on Research and development in information retrieval**
Publisher: ACM Press

Full text available: pdf(388.52 KB) Additional Information: full citation, abstract, references, citings, index terms

A lexical signature of a web page is often sufficient for finding the page, even if its URL has changed. We conduct a large-scale empirical study of eight methods for generating lexical signatures, including Phelps and Wilensky's [14] original proposal (PW) and seven of our own variations. We examine their performance on the web and on a TREC data set, evaluating their ability both to uniquely identify the original document and to locate other relevant documents if the original is lost. Lexical ...

Keywords: TREC, broken URLs, dead links, digital, indexing, information retrieval, inverse document frequency, lexical signatures, libraries, robust hyperlinks, search engines, term frequency, world wide web

7 Human-computer interaction: AnWeb: a system for automatic support to web application verification
Eugenio Di Sciascio, Francesco M. Donini, Marina Mongiello, Giacomo Piscitelli
July 2002 **Proceedings of the 14th international conference on Software engineering and knowledge engineering SEKE '02**
Publisher: ACM Press
Full text available: pdf(230.24 KB) Additional Information: full citation, abstract, references, index terms

In this paper we propose a formal method for web applications verification. The verification process is carried out by checking that either the system always satisfies a model of the specifications or by producing a counter-example.We represent the system as a Kripke structure and model a web site as a graph. Model checking is reformulated as checking that each initial state satisfies the specifications. We adopt Computation Tree Logic (CTL) as language to define the properties to be verified.Th ...

Keywords: computation tree logic, web application

8 Information retrieval on the web
Mei Kobayashi, Koichi Takeda
June 2000 **ACM Computing Surveys (CSUR)**, Volume 32 Issue 2
Publisher: ACM Press
Full text available: pdf(213.89 KB) Additional Information: full citation, abstract, references, citings, index terms

In this paper we review studies of the growth of the Internet and technologies that are useful for information search and retrieval on the Web. We present data on the Internet from several different sources, e.g., current as well as projected number of users, hosts, and Web sites. Although numerical figures vary, overall trends cited by the sources are consistent and point to exponential growth in the past and in the coming decade. Hence it is not surprising that about 85% of Internet user ...

Keywords: Internet, World Wide Web, clustering, indexing, information retrieval, knowledge management, search engine

9 Leveraging IS theory by exploiting the isomorphism between different research areas

Jean-Paul Van Belle
October 2004 **Proceedings of the 2004 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries SAICSIT '04**
Publisher: South African Institute for Computer Scientists and Information Technologists
Full text available: pdf(96.82 KB) Additional Information: full citation, abstract, references, index terms

The discipline of Information Systems is sometimes accused of being heavy on practical technology but light on conceptual theory. Identifying 'isomorphisms' between specialist research areas in other disciplines (especially mathematics) has produced spectacular results. This paper suggests that isomorphic thinking could also benefit IS research, in particular by leveraging existing frameworks and applying them outside their original context in isomorphic IS research areas.

The paper br ...

Keywords: enterprise modelling, frameworks, isomorphism, theory, theory building, website analysis

10 Browsers: Off the beaten tracks: exploring three aspects of web navigation
Harald Weinreich, Hartmut Obendorf, Eelco Herder, Matthias Mayer
May 2006 **Proceedings of the 15th international conference on World Wide Web WWW '06**
Publisher: ACM Press
Full text available: pdf(440.42 KB) Additional Information: full citation, abstract, references, index terms

This paper presents results of a long-term client-side Web usage study, updating previous studies that range in age from five to ten years. We focus on three aspects of Web navigation: changes in the distribution of navigation actions, speed of navigation and within-page navigation."Navigation actionsö corresponding to users' individual page requests are discussed by type. We reconfirm links to be the most important navigation element, while backtracking has lost more than half of its previ ...

Keywords: browser interfaces, clickstream study, hypertext, navigation, user modeling

11 Measuring information quality of web sites: development of an instrument
Pairin Katerattanakul, Keng Siau
January 1999 **Proceeding of the 20th international conference on Information Systems**
Publisher: Association for Information Systems
Full text available: pdf(134.94 KB) Additional Information: full citation, references, citings, index terms

12 Information retrieval session 6: categorization: Categorizing web queries according to geographical locality
Luis Gravano, Vasileios Hatzivassiloglou, Richard Lichtenstein
November 2003 **Proceedings of the twelfth international conference on Information and knowledge management**
Publisher: ACM Press
Full text available: pdf(545.74 KB) Additional Information: full citation, abstract, references, citings, index terms

Web pages (and resources, in general) can be characterized according to their *geographical locality*. For example, a web page with general information about wildflowers

could be considered a *global* page, likely to be of interest to a geographically broad audience. In contrast, a web page with listings on houses for sale in a specific city could be regarded as a *local* page, likely to be of interest only to an audience in a relatively narrow region. Similarly, some search engin ...

Keywords: information retrieval, query classification, query modification, search engines, web search

13 Search engineering 1: What's new on the web?: the evolution of the web from a search engine perspective

Alexandros Ntoulas, Junghoo Cho, Christopher Olston

May 2004 **Proceedings of the 13th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(502.41 KB) Additional Information: full citation, abstract, references, citings, index terms

We seek to gain improved insight into how Web search engines shouldcope with the evolving Web, in an attempt to provide users with themost up-to-date results possible. For this purpose we collectedweekly snapshots of some 150 Web sites over the course of one year,and measured the evolution of content and link structure. Our measurements focus on aspects of potential interest to search engine designers: the evolution of link structure over time, the rate ofcreation of new pages and new distinct c ...

Keywords: change prediction, degree of change, link structure evolution, rate of change, search engines, web characterization, web evolution, web pages

14 Incorporating quality metrics in centralized/distributed information retrieval on the World Wide Web

Xiaolan Zhu, Susan Gauch

July 2000 **Proceedings of the 23rd annual international ACM SIGIR conference on Research and development in information retrieval**

Publisher: ACM Press

Full text available: pdf(834.55 KB) Additional Information: full citation, abstract, references, citings, index terms

Most information retrieval systems on the Internet rely primarily on similarity ranking algorithms based solely on term frequency statistics. Information quality is usually ignored. This leads to the problem that documents are retrieved without regard to their quality. We present an approach that combines similarity-based similarity ranking with quality ranking in centralized and distributed search environments. Six quality metrics, including the *currency*, *availability*, *infor* ...

15 Innovation, management & strategy: A model for the management of dynamic web applications

Matthijs Dijkstra

March 2004 **Proceedings of the 6th international conference on Electronic commerce ICEC '04**

Publisher: ACM Press

Full text available: pdf(312.40 KB) Additional Information: full citation, abstract, references, index terms

Organizations are looking for ways to develop and maintain dynamic web pages in a time-efficient way and looking for ways to reduce the number of failures, such as broken links. Although software vendors provide software supporting the development and maintenance of dynamic web applications, they are expensive and have no formal basis. In this paper, a mathematical model is used to describe a web interface. A web interface is regarded as a

decision network and the surfing behaviour of a visitor ...

Keywords: click stream, decision theory, e-commerce, graph theory, http, interface, model, online personalization, simulation, user behaviour

16 The state of the art in automating usability evaluation of user interfaces

Melody Y. Ivory, Marti A Hearst
December 2001 **ACM Computing Surveys (CSUR)**, Volume 33 Issue 4
Publisher: ACM Press

Full text available: pdf(2.31 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Usability evaluation is an increasingly important part of the user interface design process. However, usability evaluation can be expensive in terms of time and human resources, and automation is therefore a promising way to augment existing approaches. This article presents an extensive survey of usability evaluation methods, organized according to a new taxonomy that emphasizes the role of automation. The survey analyzes existing techniques, identifies which aspects of usability evaluation aut ...

Keywords: Graphical user interfaces, taxonomy, usability evaluation automation, web interfaces

17 Model-driven development of Web applications: the AutoWeb system

Piero Fraternali, Paolo Paolini
October 2000 **ACM Transactions on Information Systems (TOIS)**, Volume 18 Issue 4
Publisher: ACM Press

Full text available: pdf(6.94 MB) Additional Information: full citation, abstract, references, citings, index terms

This paper describes a methodology for the development of WWW applications and a tool environment specifically tailored for the methodology. The methodology and the development environment are based upon models and techniques already used in the hypermedia, information systems, and software engineering fields, adapted and blended in an original mix. The foundation of the proposal is the conceptual design of WWW applications, using HDM-lite, a notation for the specification of structure, nav ...

Keywords: HTML, WWW, application, development, intranet, modeling

18 Link Analysis: Improvement of HITS-based algorithms on web documents

Longzhuang Li, Yi Shang, Wei Zhang
May 2002 **Proceedings of the 11th international conference on World Wide Web**
Publisher: ACM Press

Full text available: pdf(214.35 KB) Additional Information: full citation, abstract, references, citings, index terms

In this paper, we present two ways to improve the precision of HITS-based algorithms on Web documents. First, by analyzing the limitations of current HITS-based algorithms, we propose a new weighted HITS-based method that assigns appropriate weights to in-links of root documents. Then, we combine content analysis with HITS-based algorithms and study the effects of four representative relevance scoring methods, **VSM, Okapi, TLS**, and **CDR**, using a set of broad topic queries. Our experi ...

Keywords: HITS-based algorithms, information retrieval, relevance scoring methods

19 A Web Crawler in Perl
Mike Thomas
August 1997 **Linux Journal**
Publisher: Specialized Systems Consultants, Inc.
Full text available: html(14.82 KB) Additional Information: full citation, index terms

20 Automatically summarising Web sites: is there a way around it?
Einat Amitay, Cécile Paris
November 2000 **Proceedings of the ninth international conference on Information and knowledge management**
Publisher: ACM Press
Full text available: pdf(118.38 KB) Additional Information: full citation, references, citings, index terms

Keywords: Web site summarisation, information retrieval from links

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L13	2	10 and hyperlinks! with (((web adj pages!) or webpages!) and database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:40
L14	7	10 and hyperlinks! same (((web adj pages!) or webpages!) and database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:45
L15	889	broken adj (hyperlink or hyper-link or link)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:44
L16	893	((broken adj (hyperlink or hyper-link or link)) or (link adj4 missing adj4 URL$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:44
L17	0	16 and (hyperlinks! same ((web adj pages!) or webpages!)) with database	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:45
L18	4	16 and ((hyperlinks! or hyper-links! or links!) same ((web adj pages!) or webpages!)) with database	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:47
L19	38	16 and ((hyperlinks! or hyper-links! or links!) same ((web adj pages!) or webpages!)) same database	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/19 12:48

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Title: **Probabilistic web link viability marker and**

Document Type and Number: United States Patent 6163778

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Abstract: Hypertext information links are typically contained in documents accessible by networks. [to documents identified by these links. The link's viability is calculated based on the numb order to provide a measure of link viability. The display of the document is altered based o for all links on the document, and on the site, is used to calculate document viability and s site, respectively. These viability measures are displayed along with the corresponding link conventional search engines may be sorted based on link, document or site viability, and c also measured for viability to cull out bookmarks with low link viability to, or low documen calculations may be made by a user computer device, an Internet Service Provider, a third resides.

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Inventors:	Fogg, BJ; Nielsen, Jakob;
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Filing Date:	1998-02-06
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Assignee:	Sun Microsystems, Inc. (Palo Alto, CA)
Current Classes:	707 / 10, 707 / 3
International Classes:	G06F 017/30
Field of Search:	707/3,4,10,500,513,514 709/224

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Primary Examiner:	Kulik; Paul V.
Attorney, Agent or Firm:	McDermott, Will & Emery

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Claims:

What is claimed is:

1. Computer apparatus, comprising:

a communications interface;

a storage medium, connected to said communications interface, configured to store link identification data data generated from results of previous attempts at accessing documents identified by information links; a

a computer, connected to said communications interface and said storage medium, configured to calculate

2. The computer apparatus of claim 1 in which said computer is further configured to send and receive ove information links in a message passed over said communications interface.

3. The computer apparatus of claim 2 in which said message comprises data reporting the result of attemp time of the attempt.

4. The computer apparatus of claim 1 in which the computer is further configured to run a spider process t pointed to by information links.

5. The computer apparatus of claim 1 in which the computer is further configured to modify a presentation said calculated link viability.

6. The computer apparatus of claim 1 in which said information link is located on a bookmark list, and said bookmarked document, and said computer is further configured to calculate a document viability of each b viability and said document viability are less than a threshold value, then create an inquiry to a user as to bookmark list.

7. The computer apparatus of claim 6 further comprising means for displaying at least one of said link viab and the document viability of said bookmarked document, so that the at least one of said link viability and list.

8. A method of determining viability of an information link located on a document accessible via a network

attempting to access said information link; and

storing results of each attempted access and calculating a measure of link viability from said results.

9. The method of claim 8, further comprising accessing said document containing said information link bef

10. The method of claim 7, further comprising repeating said accessing and said attempting steps, and sto

11. The method of claim 8, in which said attempting is achieved by using a spider.

12. The method of claim 8, in which said attempting done by at least one of a user computing device, and

13. The method of claim 8, further comprising comparing a threshold value with said link viability to deter

14. The method of claim 8, in which said storing comprises sending said result via a network to a third par

15. The method of claim 8, further comprising determining the date and time at which said attempts were date and time to calculate link viability.

16. A method of determining viability of at least one information link located on a network device, where s list identifying at least one bookmarked document, comprising the steps of: attempting to access each sai viability of each bookmarked document and a link viability, and if at least one of said link viability and said value, then creating an inquiry to a user as to whether the bookmarked document should remain on the b

17. The method of claim 16, further comprising displaying at least one of said link viability of said informat viability of said bookmarked document, so that the at least one of said link viability and said document via

18. The method of claim 16, further comprising determining if the number of stored results of said attemp and if not, inferring link viability from a second calculation of link viability for at least one other informatio

19. A method of determining viability of an information link located on a document accessible by a networ

receiving data indicating results of information link access attempts; and

calculating link viability based on said data.

20. The method of claim 19, further comprising storing said data in a database.

21. The method of claim 20, further comprising setting a property of a link anchor or icon associated with viability.

22. A method of retrieving a document, comprising:

searching information retrieval system for documents containing one or more page elements; and

ordering search results based on the number of page elements and the viability of a link to a document.

23. The method of claim 22, further comprising displaying said search results with an indication of the nun each document corresponding to the ordered search results.

24. The method of claim 23, further comprising displaying said document with said link anchor or icon set

25. The method of claim 22, further comprising displaying a visual indication of said link viability along wit

26. A method of rating a web document, comprising the steps of:

retrieving link access attempt data from a database for each information link contained in said web docum

calculating link viability for all links on said web document based on said link access attempt data; and

rating of said web document for which link viability is calculated based on said link viability for all links on

27. A method of rating a web site, comprising the steps of:

retrieving link access attempt data from a database for each information link contained in said web site;

calculating link viability for all links on said web site based on said link access attempt data; and

rating of said web site for which link viability is calculated based on said link viability for all links on said w

28. A computer program product comprising:

a memory medium; and

a computer program stored on said memory medium, said computer program comprising instructions for a document accessible via a network, and storing results of each attempted access and calculating a measur

29. The computer program product of claim 27, in which the instructions further comprise accessing said d attempting to access said information link.

30. The computer program product of claim 28, in which the instruction further comprise repeating said ac of said attempt in a database.

31. The computer program product of claim 28 in which said information link is located on a bookmark list, instructions for identifying at least one bookmarked document, and said computer is further configured to document, and if at least one of said link viability and said document viability are less than a threshold val bookmarked document should remain on the bookmark list.

32. The computer program product of claim 31 in which the computer program product further comprises of said information link to said bookmarked document and the document viability of said bookmarked docu document viability is associated with said bookmark list.

33. A system for information retrieval comprising:

a network;

at least one server computer apparatus, storing a first document having an information link pointing to a s document across the network in response to a document request;

at least one client computer apparatus, connected to said network, configured to request access to said fir

a database, accessible by said client computer apparatus, that stores results of previous attempts at acces link viability of said information link based on said stored results.

34. A method of providing an indication of link rating based on link viability, comprising:

determining link viability based on previous successful attempts at accessing an information link; and

altering a display of a document containing said information link based on said determination of link viabili

35. The method of claim 34, in which the step of altering comprises the step of searching a document cod information link based on said link viability determination.

36. A computer program product comprising:

a memory medium; and

a computer program stored on said memory medium, said computer program comprising instructions for

retrieving link access attempt data from a database for each information link contained in said web docum

calculating link viability for all links on said web document based on said link access attempt data; and

rating of said web document for which link viability is calculated based on said link viability for all links on

37. A computer program product comprising:

a memory medium; and

a computer program stored on said memory medium, said computer program comprising instructions for

retrieving link access attempt data from a database for each information link contained in a web site;

calculating link viability for all links on said web site based on said link access attempt data; and

rating of said web site for which link viability is calculated based on said link viability for all links on said w

38. A computer program product comprising:

a memory medium; and

a computer program stored on said memory medium, said computer program comprising instructions for a information link, and storing a result of said attempted access,

wherein said information link is located on a bookmark list, and said computer program product further co: document, and calculating a document viability of each bookmarked document, and if at least one of said l threshold value, then creating an inquiry to a user as to whether the bookmarked document should remair

39. The computer program product of claim 8 in which the computer program product further comprises in said information link to said bookmarked document and the document viability of said bookmarked docum: document viability is associated with said bookmark list.

Description:

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is directed to information systems, and more particularly, to determining the viability of hyp

2. Description of Related Art

Large information networks, such as the World Wide Web are well-known in the art. Documents stored in s as hypertext links, to related information.

The Problems

Navigating through information space in network information systems such as the World Wide Web (the w· because the web is a dynamic environment where documents are frequently moved, outdating the networ some network components, such as servers or pointers, may be temporarily or permanently out of service as URL (Universal Resource Locator) every time the link is attempted, not infrequently an error message, s users click on a link that does not work. Users have no way of telling if the link is temporarily disabled (du disabled due to a web page that has moved or been shut down. Understanding the differences between te to know if the user can profitably return to the desired site at a later time. Unfortunately, users have no w

Web site creators have little incentive to continually update links they list or to take down old web pages. more outdated web pages with links that never work.

Unpredictability of web links leads to a lower-quality experience when people use the web. If users start p users may be less inclined to seek information through the web. The prior art provides only a binary indica for a way for web users to know the probability that a given web link will work, and a method for rating we

SUMMARY OF THE INVENTION

The problems of the prior art are overcome by providing methods, apparatus, systems, and computer proc rating documents and sites based on the link viability. Data is gathered regarding the results of attempted information link is calculated based on the number of successful attempts to access the link in order to pro of the document is altered based on the measure of link viability. In some embodiments, an average of lin calculate a measure of document viability which can be used to compare that document with other docum average page viabilities on the site or the average link viabilities for all links on the site. These indications document, and site. Display of results retrieved by conventional search engines may be sorted or ordered accordingly. The viability of links contained in bookmark lists are also measured for viability to cull out boo conjunction with relevance ranking by searching on engines during keyword searching. The viability calcul Service Provider, a third party service, and/or the server on which the document resides, depending on im

The foregoing and other features, aspects and advantages of the present invention will become more appa invention when taken in conjunction with the accompanying drawings.

NOTATIONS AND NOMENCLATURES

The detailed descriptions which follow may be presented in terms of program procedures executed on a co descriptions and representations are the means used by those skilled in the art to most effectively convey

A procedure is here, and generally, conceived to be a self-consistent sequence of steps leading to a desire manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of ele transferred, combined, compared and otherwise manipulated. It proves convenient at time, principally for values, elements, symbols, characters, terms, numbers, or the like. It should be noted, however, that all c appropriate physical quantities and are merely convenient label applied to these quantities.

Further, the manipulations performed are often referred to in terms, such as adding or comparing, which a by a human operator. No such capability of a human operator is necessary, or desirable inmost cases, in a

the present invention; the operations are machine operations. Useful machines form performing the opera computers or similar devices.

The present invention also relates to apparatus for performing these operations. This apparatus may be sp comprise a general purpose computer as selectively activated or reconfigured by a computer program stor not inherently related to a particular computer or other apparatus. Various general purpose machines may teachings herein, or it may prove more convenient to construct more specialized apparatus to perform the of these machine will appear from the description given.

BRIEF DESCRIPTION OF DRAWINGS

The objects, features and advantages of the system of the present invention will be apparent from the foll

FIG. 1A illustrates a computer of a type suitable for carrying out the invention.

FIG. 1B illustrates a block diagram of exemplary internal hardware of the computer of FIG. 1A.

FIG. 1C illustrates an exemplary memory medium suitable for storing program and data information in acc

FIG. 1D is a block diagram of a network architecture suitable for carrying data and programs in accordanc

FIG. 2 is a flow chart of an exemplary process used for determining information link viability in accordance

FIG. 3 illustrates an exemplary message format used in reporting results of link access attempts in accord

FIG. 4 illustrates a typical format of a database storing information about a link attempt.

FIG. 5 is a flow chart of an exemplary process used to gather information used in calculating link viability i

FIG. 6 is a flow chart of an exemplary process used to provide an indication of link, page and site viability

FIG. 7 illustrates a typical format of a database storing information about document rating based on link vi

FIG. 8 illustrates a typical format of a database storing information about site rating based on link viability

FIG. 9 is a flow chart of an exemplary process used to infer and display an indication of link viability based embodiment of the invention.

FIG. 10 is a flow chart of an exemplary process used to display an indication of link viability by modifying a

FIGS. 11 and 12 are flow charts of an exemplary process used to combine link viability calculations with ke

FIG. 13 is a flow chart of an exemplary process used to identify links to be culled from a bookmark list usir with one embodiment of the invention.

FIG. 14 illustrates a typical format of a database storing information used in the process depicted in FIG. 1

FIG. 15 is a flow chart of an exemplary process used to adjust properties of displays having links, based or

DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

FIG. 1A illustrates a computer of a type suitable for carrying out the invention. Viewed externally in FIG. 1. having disk drives 110A and 110B. Disk drive indications 110A and 110B are merely symbolic of a number computer system. Typically, these would include a floppy disk drive such as 110A, a hard disk drive (not sl The number and type of drives varies, typically, with different computer configurations. The computer has keyboard 130 and a mouse 140 are typically also available as input devices. Preferably, the computer illus Microsystems, Inc.

FIG. 1B illustrates a block diagram of the internal hardware of the computer of FIG. 1A. A bus 150 serves components of the computer. CPO 155 is the central processing unit of the system, performing calculation only memory (160) and random access memory (165) constitute the main memory of the computer. Disk system bus 150. These disk drives may be floppy disk drives, such as 173, internal or external hard drives drives such as 171. A display interface 175 interfaces a display 120 and permits information from the bus synthesizer 177 (with usual interfaces) are used in clearing error messages. Communications with externa

FIG. 1C illustrates an exemplary memory medium which can be used with drives such as 173 in FIG. 1B or floppy disk, or a CD ROM, or a Digital Video Disk will contain the program information for controlling the cc accordance with the invention.

FIG. 1D is a block diagram of a network architecture suitable for carrying out data and programs in accord network such as the Internet. Network 180 serves to connect user computers 100a, 100b, 100c to each ot connected directly to network 180, which can be achieved by a T1, T2 or T3 line. User computers 100b acc connected to an Internet Service Provider (ISP) 187 which provides online service access to network 180. local area network (LAN) or intranet 190. LAN 190 has a firewall or proxy server 192 that controls the acce 180 is configured like the World Wide Web, servers 185a and 185b provide access to web sites stored ther resource locator) which access a home page or document that typically has information links to other page may reside on server 185a or another server such as 185b.

One way to navigate through the cyberspace of network 180, such as the Internet or World Wide Web, is t space on a web-browser's tool bar displayed on user computer 100b, for example. For example, typing in "company's" web site. Alternatively, it could access another site within the same domain, such as in an int

Another way to navigate through the Internet is to access a hyperlink. A hyperlink is often a colored or un concealed address of a document on a site on server 185a. A site is a collection of files, documents and gr through network 180. The text phrase is generally not the actual address. The underlined words could hid like: http://www.company.com.

The browser software on the user's computing device typically sends the address to a network, either dire modem used to connect over a dial-up network to an Internet Service Provider (ISP).

The ISP 187 or LAN 190 sends the address to the nearest node of the domain named system (DNS). The D among servers, that volunteers to be a repository for a different kind of address called IP (Internet Protoc between 1 and 256 separated by periods, as opposed to the text of the URL. For example, the IP of www.c

The DNS returns the site's IP address to the browser. Using the IP, the browser sends a request through a traffic and transfers the request along a path with the least traffic. At each intersection in the Internet, the site server 185a receives the browser's request, the site server 185a reads the origination address in the h request. At this point, the message in the status line at the bottom of the browser's display screen change "waiting for reply"). The request itself is put into a queue to wait until the server 185a finishes fulfilling ea

Server 185a may send the request to a different server 185b, where the page actually resides. For exampl the user to a welcome page or company's "home page".

A document or web page itself is comprised of a text file of a mark-up language such as HTML (hyper text control the formatting of text in the file. The codes may also include the URLs of graphics, videos and soun different site entirely contained, for example on another server 185b. When the server 185a is free to resp HTML document back over the Internet to the browser's Internet Service Provider address. The route used user's request followed to reach the server 185a.

As the different parts of the page arrive at the user's PC, the parts are stored in a cache, a combination st same page or any of the elements on the page, such as a graphic, the browser retrieves it from the cache

Meanwhile, the browser begins using the elements in the cache to reassemble the web page onscreen, foll determine where to place text, graphics or videos onscreen. Because not all portions of the web page arriv appear onscreen before others. Text, which is the simplest element to send, usually appears first, followed videos. Icons in the upper-right corners of both Netscape Navigator.TM. and MicroSoft.TM. Internet Explor still being received. When all elements have arrived and have been added onscreen, the animations freeze now been successfully retrieved by the browser.

A website that includes a search engine, such as AltaVista.TM., Yahoo!.TM., or Excite!.TM., regularly runs information about what is accessible via network 180. The spiders search sites across the World Wide Web every link they find. Other spiders follow only certain types of links, ignoring those that lead to graphics, s Internet resources, such as WAIS (Wide Area Information Server) databases.

When a spider identifies a document, the spider uses indexing software to index the information. Like the i quickens the location of a specific piece of information. The type of information indexed depends on the se document. Others index the most frequently used words or words in its title, headings, and subheadings a

FIG. 2 is a flow chart of an exemplary process used for determining information link viability in accordance present invention begins a loop at step 200 where, for each URL, a client (such as a user computer 100a, service 188, or firewall 192) accesses the URL. Next, the client determines 204 if the web document identi enters another loop 210 where for each link, access to the referenced URL is attempted using the web link

Thus, the client connects to server 185a and requests download of a web document. The web document m on server 185a or another server 185b. If the client desires to retrieve the second document, the client m such as the hypertext link, and the client attempts 210 to connect to the server where the second docume and stored 214 in a database, such as database 400 described in conjunction with FIG. 4 below.

There are several reasons why a document may not be available. For example, a communications link linki Alternatively, the server itself may be down for maintenance or because of a malfunction. It may also be t address for document on its server has been changed. It may also be that document two has been moved pointing to document two may contain a typographical error (in the HTML of document one) which does nc reasons for an information link being unavailable are merely temporary, whereas others are substantially

At step 216, the client determines whether the connection is successful, and the outcome is stored in data the data stored in database 400. An example calculation of link viability includes dividing the total number number of attempts and multiplying by 100%. This measure of link viability is also stored 222 in database optionally sent 224 to third party service 188 which houses another database 400 to act as a repository fo service 188 supplies reliable data, based on large numbers of results of link attempts from many clients, t

The process continues by accessing 226 the next link, if one exists, and returning to step 210 to proceed t processed. Then, the next URL is accessed 228 and the process loops back to step 200 to repeat the proce (pages) on a site are processed. The process is repeated periodically to maintain calculations of link viabili

FIG. 3 illustrates an exemplary message format used in reporting results of link access attempts stored in and includes a link identifier 310 that is uniquely associated with the link for which access is attempted. Th as an example: a destination address 322 uniquely identifying the location where the data is to be stored; which the attempted link access was made; an identifier of message type 326 that conveys information su and a time stamp 328 including the date and time of day when the attempt was made.

FIG. 4 illustrates a typical format of database 400 in which a plurality of messages 300, indicating informa individual link identifier 310 is stored in a link identifier field 410. Message type 326 populates both a num successful attempts field 414. The date/time of each attempt 328 populates the date/time field 416. Basec successful attempts, a measure of viability field 420 is populated for each link identified. An example calcu attempts out of the number of total attempts is one measure of link viability. However, many other calcula weighting more recent results more heavily than older results, and /or considering only results within a pa

FIG. 5 is a flowchart of an exemplary process used by a client to gather information used in calculating link implemented by any client, third party service 188 is a prime candidate for utilizing the process of FIG. 5 s provide information on link viability to subscribers requesting such information. The information is receivec attempts and their results. Those results are summed and stored 502 for each link from all users and ente

Additionally, an optional method for gathering information on link viability involves sending 510 a web spic return time stamped entries back to the client, e.g., third party server 188. The time stamped attempts ar 400 along with the data stored 502 from users subscribing to the service provided by third party service 1

By utilizing both methods of gathering data (i.e., receiving information from users and sending out a spide can populate database 400 to provide very reliable results as to viability of a particular link. Relying on ran inaccurate estimation of the link viability due to other coincidental random events like the server being dov the web master. However, by continuously gathering 510 data on various web links using the spiders, in c users, very reliable data populates database 400 to provide a more accurate depiction of web link viability.

Additionally, the process of FIG. 5 optionally receives 514 large blocks of data from clients such as ISP 186 users 100b. In this way, data can be efficiently transferred to third party service 188 which sums and stor from all ISPs 186. Preferably, the large blocks of data from the ISP 186 is supplemented by the other data process can continue 520 according to the flowchart of FIG. 6.

FIG. 6 illustrates a flow chart of an exemplary process for utilizing data stored in database 400 which is ga viability measurement is used to provide a visual indicator to viewers prior to attempting access to a link. , when all sites on a server are processed. A page loop begins 602a for each page on a site and concludes 6 begins 604a for each link on the page where optionally, more recently time stamped link attempts are wei attempt entries. Step 610 adds flexibility beyond the straight percentage approach to link viability discusse of the time stamped entries.

For example, a document A stored on server 185a contains a link to a document B stored on server 185b. B from time to time, and there is no indication provided in document A during the times when document B takes the web master to update document B, the link has been successfully accessed 0 out of the 10 atten week. However, for 52 weeks preceding the time when document B is inaccessible, the link in document A which corresponds to a link viability rating of 100%. If a straight-average were taken, link viability is calcu accurate measure of link viability, the most recent 10 failures of access occurring in the most recent week attempts. In this case, this lowers the link viability rating to indicate a decreased probability that the link v choice in the example of weighting (two times) and the window to which the weighting is applied (one wee need. For example, a window of time limited to the most recent week could easily have been replaced by t If x were chosen to be 10, the result and weighted link viability would be equivalent to doubling the weigh 83.3%.

The process of FIG. 6 continues at decision 612 where the client determines if the total number of attempt the number of total attempts is greater than this threshold, the measure of link viability is more indicative attempt because of statistical reliability; whereas if the number of attempts is low, below the threshold, th example, if only two attempts were made and one resulted in a successful access, a link viability might be might have occurred at a time when the server was uncharacteristically unavailable. Therefore, the 50% li probability that an attempt would result in access.

If the number of attempts is less than the threshold, the process proceeds to FIG. 9 (step 612-no). On the threshold, the process proceeds (612-yes) to calculate 616 the measure of link viability. In cases which litt inference, the document may be given a default low-reliability indication.

Next, a visual indicator is created and provided 620 to represent the link viability (i.e., the probability of su take any number of forms. One way these indications are provided is by searching the HTML code of the p and changing this color depending on the measure of link viability. One color indicating low link viability m and as the measure of link viability increases closer to 100% the color of the link anchor or icon changes t size of the link anchor or icon of an icon link, and increasing the font size of a textual link. Alternatively, th such as a thermometer placed adjacent to the link. As link viability increases, the reading on the thermom that can display link viability.

The link loop concludes 604b and returns to calculate the link viability for the other links on the page. Whe a page viability is calculated and a visual indication of the page viability is displayed 622. For example, the original HTML code is altered to insert text, or an icon such as a thermometer, depicting an average percei placed at the top of the first screen displayed to a client, such as by overlaying a text box, labeled page vi

Next, the page loop concludes 602b and returns to 602b to calculate the link viability for the links on the n

are no more pages on the site, a site viability is calculated and a visual indication of site viability is display additional sites. The site viability indication is also provided by text or icon and is located at the top of the the types of displays and location of link, page and site viability and location mentioned herein are non-lim viability.) The process is repeated periodically 640 in order to maintain updated measures of link viability, corresponding indicators of each.

FIG. 7 discloses a database 700 used in determining page viability by storing data on the link viabilities ca page loop 602a/b of FIG. 6. Each page is associated with a unique page identifier 710, such as the URL of a link number field 712. Using database 700 allows a page viability to be calculated (for example by avera in field 714.

FIG. 8 discloses a database 800 used in determining site viability by storing data on the link viabilities calc site loop 600a/b of FIG. 6. Each site is associated with a unique site identifier 810, such as the URL of the weighted and unweighted averages of the individual link viabilities on the entire site. The weighted averag inversely proportional to the number of links on that page, for example. Thus, if the number of links on a p multiplied by 1/10, and the individual weighted link viabilities are summed to arrive at a page viability. Th the weighted average of documents on the site 812. The average viability (unweighted) for the total numb unweighted average takes the straight average up all links on all pages of the site, and averages the link v the site 814.

FIG. 9 discloses a flow chart of a process of the present invention for calculating link viability differently ac database, such as database 400, is accessed 900 and it is determined 910 whether a particular link has en no), a visual indicator is created 912 identifying that there is no data in the database, and the process opti exist (910-yes), the number of entries are compared 914 to a threshold, e.g., 1000. If the number of entri link viability is calculated 916, for example, by calculating the straight percentage of successful attempts o for a particular link is not greater than the particular threshold, a determination is made 918 as to whether listed on a page or site where the link of interest resides.

Optionally, the process depicted by FIG. 9 proceeds from step 912 to step 918, or alternatively, the proces particular link of interest are inferred from other links on the page and site on which the link of interest re:

If other links exist on the page, the link viability of the other links are attributed 920 (to varying degrees) data. For example, if there are no entries in the database for the link of interest, the viability of the other l associated with the link of interest as a way to infer the link viability of the link of interest. Thus, the viabil lower the link viability of the link of interest. For example, if the number of entries for the link of interest is associated with the link viability calculated for the link of interest; and the weight attributed to the other li data is more likely to be statistically reliable as the entries approach the threshold. Any method can be use of other links to a particular link of interest.

Alternatively, it is determined 922 that no entries exist for any other links on the page or site. In this case, even though the number of entries is less than the threshold. Alternatively, if no data exists for the link of the lack of data for the link, page site. Then, a visual indicator is displayed 924 identifying link viability. Alt indication.

FIG. 10 illustrates a flowchart for performing a process similar to that described in conjunction with FIG. 6 party service 188 which is called upon in between the client requesting the document and the server provi software ISP 186, or a browser developer could implement this process.

Initially, the page is retrieved 1000 from server 185a. Before being sent to the requesting client, the page viability for each hypertexted link on the page requested. The page is modified 1002 in a manner similar to provide page site link ratings of viability. Optionally, the modified page is stored 1003. Next, the modified real time. Thus, the visual indication of link viability is performed on the fly without any noticeable delay ca of the document in order to provide the visual indicator of link viability. Of course, the indications of page 1002 and 1004 as a way to provide a page rating or site rating to the requester.

FIG. 11 depicts a flowchart for an exemplary process for utilizing link viability in conjunction a key word or profit from document rating during web searches. A search engine receives 1102 a user's key word search conventional search indices, and data such as that stored in database 700, to identify 1106 documents ma each document is identified 1108 by accessing the portion of the database corresponding to database 700. displayed at this point, but is preferable to continue 1110 to FIG. 12.

FIG. 12 is a flowchart of an exemplary process for ordering or sorting documents based on relevance ranki query, the search engine looks for the key words or other page elements in the index of the database the then creates a new HTML page on the fly, listing the results of the user's search. Most search engines disp first few sentences of the documents as well, and some rank the sites for relevancy according to how close complete with hypertexted links for the web pages contained in the database. To go to the actual page, th with a mouse pointer.

In FIG. 12, a search engine determines 1202 the relevance of a document based on the search terms inpu rating as stored in database portion 700 is combined 1204 to produce a weighted-average relevance ranki 1206 for display based on weighted-average relevance ranking. Conventional systems display a "relevance document. This display is altered to reflect the weighted-average relevance ranking and/or the document r

FIG. 13 is a flowchart of an exemplary process for culling bookmarks off of a user's bookmark link list. The attempt is made 1304 to access each link on the bookmark list using a local spider. Optionally, the proces bookmarked from a database residing, for example on the user's computing device or on third party servic database, and link viability (i.e., the likelihood of link access) is calculated 1306. If the date of user's last a

date, a prompt such as a visual inquiry is initiated, asking if the bookmark should remain on the list. This i bookmark on the list depending on how often the bookmark is accessed. Alternatively, if link viability is de example, or if the document viability of the document to which the bookmark points is less than a thresho the bookmark should remain on the list. This helps to remove bookmarks from the list which have a low lir document viability rating. A user adjusts the threshold by typing in the amount of the desired threshold va interface mechanism. The procedure is repeated periodically 1312 in order to keep a user's bookmark list list, a message having a format similar to that depicted in FIG. 3 is forwarded to a database 1400.

FIG. 14 illustrates a typical format of a database 1400 in which a plurality of messages 300 indicating infor bookmark is associated with a unique identifier 1402, such as its URL, and also a bookmark descriptor 140 is typically more comprehensible than the URL. The date of last access to the bookmark is place in access been since the bookmark has been used.

FIG. 15 is a flowchart of an exemplary process for displaying an indication of link viability alone with the lir according to any suitable method utilizing previous results of attempts to access the link. Next, a value of viability of the link. As mentioned above, the mark-up language (e.g., HTML) dictating the display of the d reflect the viability. The document containing the link is then displayed 1506 with each link anchor or icon viability as determined 1502.

In the manner indicated, the problems as found in the prior art with the respect to indicating link viability i an information space is greatly enhanced.

Although the present invention has been described and illustrated in detail, it is clearly understood that th to be taken by way of limitation, the spirit and scope of the present invention being limited only by the ter

<- Previous Patent (System and method for reducing location ..) | Next Patent (M

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"www.dbmsag.com" Search Advanced Search Preferences

Web

Results 1 - 1 of 1 for "www.dbmsag.com". (0.29 seconds)

Did you mean: "www.*dbmsmag*.com"

Probabilistic web link viability marker and web page ratings ...
Rick Hower, "Beyond Broken Links," Internet-Systems, Jul. 1997, 6 pages at < http://**www.dbmsag.com**/9707i03.html> . "Web Site Garage," Tuneup FAQ, 6 pages, ...
www.freepatentsonline.com/6163778.html - 71k - Cached - Similar pages

Did you mean to search for: "www.*dbmsmag*.com"

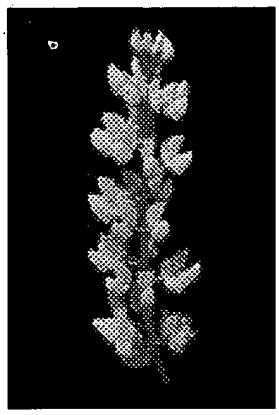
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Glossary of Terms

Home Page
Services
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Glossary

This Glossary contains terms and abbreviations related to this web site. For a more comprehensive list see whatis.com.

Animated GIF
A moving GIF image on a Web page, created by combining several images into a single GIF file. An animated GIF can loop endlessly or it can display a few images and then stop the animation.

Browser
A World Wide Web program which retrieves Web pages for display on a computer screen. The two most popular browsers are Netscape and Microsoft Internet Explorer.

Dither
To approximate a color that is not part of the current palette by combining pixels of different colors close to each other. Viewed from a distance, it gives the effect of the desired color, but viewed closely, the dots are visible. Dithering can be avoided by selecting non-dithering colors that are compatible with different browsers.

Domain Name
The unique name that identifies an Internet site. On the Web, the domain name is the part of the Uniform Resource Locator (URL) that tells a domain name server where to forward a request for a Web page. For example, the domain name of this web site is starrsites.com.

E-mail
Electronic mail, which enables people with different computers and operating systems to communicate with each other via the Internet.

GIF
Graphical Interchange Format, a bitmap graphical format, originally developed for CompuServe and widely used in WWW pages. It is especially appropriate for logos, line drawings, and other images with solid colors and distinct borders

between colors.

Home Page (or Homepage)
Originally, the web page that a browser is set to use when it starts up. The more common meaning refers to the top level document of a set of web pages.

Host
A network computer that is a repository for services available to other computers on the network.

HTML
HyperText Markup Language, the coding language used to create hypertext documents for the World Wide Web. In HTML, a block of text can be surrounded with tags that indicate how it should appear (for example, in **bold face** or *italics*). Also, in HTML a word, a block of text, or an image can be linked to another file on the Web. HTML files are viewed with a World Wide Web browser.

HTML validator
Service which checks HTML documents for compliance with HTML standards.

HTTP
HyperText Transfer Protocol, the set of rules for exchanging text, graphic images, sound, video, and other multimedia files on the World Wide Web.

Hyperlink
A link in a document to information within that document or another document. These links are usually represented by highlighted words or images. When a reader selects a hyperlink, the computer display switches to the document or portion of the document referenced by the hyperlink.

Hypermedia or **Hypertext**
Richly formatted documents containing a variety of information types, such as text, images, video, and audio. These documents generally contain hyperlinks.

Internet
A vast global computer network of networks connecting government, academic and business institutions.

InterNIC
Internet Networked Information Center, the organization responsible for registering and maintaining domain names on the World Wide Web.

JPEG
Joint Photographic Expert Group, a graphical format widely used in WWW pages. JPEG is a compressed format which can result in significantly reduced

file sizes for photographs and other images with continuous color changes.

Link
An active connection to another web page, location in a web page, file, or other Internet resource. Selecting the link takes you to the new location.

MIDI
Musical Instrument Digital Interface.

Network
A connection of two or more computers so that they can share resources.

Search Engines
Web services which help search through Internet addresses for user-defined terms or topics in which you are interested.

Server
A computer that holds the files for one or more sites.

Thumbnail
A small version of an image, normally linked to a larger version.

URL
Uniform Resource Locator -- The standard way to address a source of information on the Internet. For example,
http://www.starrsites.com/ points to the Starr Sites home page, and
http://www.starrsites.com/glossary.htm addresses the Starr Sites glossary page.

Validator
See HTML validator.

Web
See WWW.

Web site or **website**
A collection of Web pages on a particular subject, including a beginning file called a home page. Other pages on the site can be reached, directly or indirectly, from the home page.

WWW or **the Web**
World Wide Web, a distributed hypertext-based information system on the Internet, which provides users an easy way to access global information consisting of a mixture of text, graphics, sound files, and video clips.

Return to top of page.

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define: hyperlink Search Advanced Search Preferences

Web

Related phrases: hyperlink or hypertext internal hyperlink broken hyperlink followed hyperlink hyperlink rules default hyperlink visited hyperlink hyperlink or link

Definitions of **hyperlink** on the Web:

- A link in a document to information within that document or another document. These links are usually represented by highlighted words or images. When a reader selects a hyperlink, the computer display switches to the document or portion of the document referenced by the hyperlink.
 www.starrsites.com/glossary.htm

- a hypertext link; a graphic or text string which, when clicked, opens a new web page or jumps to a new location in the current page.
 www.amberton.edu/VL_terms.htm

- Text or graphics that are hyperlinked will transport a user to another location of content either on the same page or another page.
 www.asiaone.com.sg/mediakit/onlineadterms.html

- Example of hyperlink in an HTML document: Web Search Tools When the HTML document is viewed with the Web browser, the tag information between angle brackets is not visible, but the words Web Search Tools are displayed in whatever format or colour is defined for links by the browser or the document's author (the browser default is often blue, underlined text but HTML authors may specify any colour or style). ...
 www.acad.bg/beginner/gnrt/appendix/glossary.html

- A documentation cross-reference method to enable the retrieval of a specified document (webpage, *.pdf or other format) by Clicking on the text/image or other media which has a hyperlink.
 www.constructor.co.uk/definitions.htm

- The text you find on a Web site which can be "clicked on" with a mouse, which in turn will take you to another Web page or a different area of the same Web page.
 www.7designavenue.com/glossary.htm

- A hyperlink, more commonly called a link, is an electronic connection between one web page to either (1) other web pages on the same web site, or (2) web pages located on another web site. More specifically, a hyperlink is a connection between one page of a hypertext document to another.
 www.red.net/glossary/h.php

- In a hypertext or hypermedia document, an emphasized word, phrase, image or other element that, when selected, leads to another document. Sometimes called a hot link.
 faculty.valencia.cc.fl.us/jdelisle/lis2004/glossary.htm

- A pointer from text, from a picture or a graphic, or from an image map to a page or file on the World Wide Web. On the World Wide Web, hyperlinks are the primary way to navigate between pages and among Web

sites. Also called link.
wwwlb.aub.edu.lb/~acc/Resources/glossarycommonterms.htm

- On the Web or other hypertext systems, hyperlink is a synonym for both link and hypertext link. Possibly, the term originated because "link" was not felt to be specific enough. And it's shorter than "hypertext link."
 www.marketing.org.nz/emarket_dictionary.php

- A network link from one item in a digital library or web site to another.
 www.cs.cornell.edu/wya/DigLib/MS1999/glossary.html

- An element in an electronic document that links to another place in the same document or to an entirely different document. Typically, you click on the hyperlink to follow the link.
 www.panama-hosting.com/glossary.htm

- This is the clickable link in text or graphics on a web page that takes you to another place on the same page, another page or a whole other site. It is the single most powerful and important function of online communications. Hyperlinks are revolutionizing the way the world gets its information.
 smartbizconnection.com/advertising_glossary_index.htm

- In World Wide Web pages, hyperlinks are highlighted text or images which, when selected (usually by clicking the mouse button), follow a link to another page. Hyperlinks can also be used to automatically download other files as well as sounds and video clips.
 www.devel.legend.co.uk/resources/gloss.html

- A link in an HTML document that leads to another World Wide Web site, or another place within the same document. Hyperlinks are usually underlined or shown in a different color from the surrounding text. Sometimes hyperlinks are pictures. Embedded hyperlink – A hyperlink that is incorporated into a line of text.
 alt.uno.edu/glossary.html

- Text, images, graphics that, when clicked with a mouse (or activated by keystrokes) will connect the user to a new Web site. The link is usually obvious, such as underlined text or a "button" of some type, but not always.
 mason.gmu.edu/~montecin/netterms.htm

- A connection found in the web pages and other electronic documents that, when clicked, automatically opens a file or a web page in your web browser. A hyperlink may be a word, icon, or graphic. When a hyperlink is text it typically displays in a different color and may be underlined. A text hyperlink that has already been visited will usually display in a third color.
 www.fcs.uga.edu/cs/tutorials/composer/Glossary.htm

- (aka link) An image or portion of text on a Web page that is linked to another Web page, either on the same site or in another Web site. Clicking on the link will take the user to another Web page, or to another place on the same page. An example of a hyperlink would be this.
 weblogs.upei.ca/book/print/149

- A link from one part of a page on the Internet to another page or Web site.
 www.rcn.com/business/hosting/glossary.php

- A hyperlink is a clickable link to another Web page or site, a connection between two anchors. Clicking on one anchor will take you to the linked anchor. Can be within the same document/page or two totally different documents.
 www.pfizer.com/pfizer/privacy/mn_privacy_glossary.jsp

- a relationship between two anchors, called the head and the tail. The link goes from the tail to the head. The head and tail are also known as destination and source, respectively.
 www.freesoft.org/CIE/RFC/1866/7.htm

- a word or graphic in a document with some form of highlighting that links to another document; also called an anchor
 www.cs.trinity.edu/About/The_Courses/cs301/html/intro/WWWSum_7.html

- Hyperlinks are text, images, or files that you click to open another Web page. Most hyperlinks appear as underlined and/or colored text on a Web page.
 www.urnuc.edu/ade/glossary.html

- An icon, graphic or word on a web page that opens another page when clicked.
 www.alamedapt.com/alamedanet/glossary.html

- Linking elements that provide nonlinear ways to move around and between digital documents, or to link to related objects such as image or audio files. See also Linking Elements.
 www.loc.gov/ead/ag/agappf.html

- a link from a hypertext file to another location or file; typically activated by clicking on a highlighted word or icon at a particular location on the screen
 wordnet.princeton.edu/perl/webwn

- A hyperlink, or simply a link, is a reference in a hypertext document to another document or other resource. As such it would be similar to a citation in literature. However, combined with a data network and suitable access protocol, it can be used to fetch the resource referenced. This can then be saved, viewed, or displayed as part of the referencing document.
 en.wikipedia.org/wiki/Hyperlink

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Document management and Web technologies: Alice marries the Mad Hatter

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Authors V. Balasubramanian E-Papyrus, Inc., Edison, NJ
Alf Bashian Merrill Lynch, Princeton, NJ

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↑ REFERENCES

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Manirupa Das , Pamela B. Lawhead, Information storage and management in large web-based applications using XML, The Journal of Computing in Small Colleges, v.18 n.6, p.72-79, June 2003

↑ INDEX TERMS

Primary Classification:

H. Information Systems

↳ **H.3** INFORMATION STORAGE AND RETRIEVAL

↳ **H.3.4** Systems and Software

↳ **Nouns:** World Wide Web (WWW)

Additional Classification:

H. Information Systems

↳ **H.3** INFORMATION STORAGE AND RETRIEVAL

↳ **H.3.4** Systems and Software

↳ **Subjects:** Information networks

I. Computing Methodologies

↳ **I.7** DOCUMENT AND TEXT PROCESSING

↳ **I.7.2** Document Preparation

↳ **Subjects:** Hypertext/hypermedia

J. Computer Applications

J.1 ADMINISTRATIVE DATA PROCESSING

Subjects: Marketing

General Terms:
Design, Languages

REVIEW

"Harold Borko"

"This article describes how [the authors] used a systematic design methodology and document management facilities to offset Web deficiencies in constructing a large-scale authoring and publishing system" (p.107). The system was designed to enable Merrill Lynch's internal marketing groups to deliver information in many formats and media to financial consultants. The developers started with a formidable list of requirements, which included the need to manage large amounts of unstructured material, facilitate its use by nontechnical personnel, ensure currency, provide a consistent structure, and enable attribute searching, hyperlinking, and the use of metatabs in a continually evolving system. This was the challenge. The development methodology for the Web information system (WIS) included seven iterative stages: information architecture, user interface, content creation, workflow, publishing, link management, and search and retrieval. Figure 1 in the paper illustrates the software architecture of the authoring and publishing system. Figure 2 separates information about products into components such as description, client benefits, and sales charges. The authors state that document management systems could be combined with Web technologies and applied to reengineer authoring and publishing information systems. However, one is likely to encounter resistance to changes in work practices, as the authors did. Their conclusion is that "despite all our systematic efforts, our initial perception is the system is now less-than-successful due to non-technical factors" (p. 114). *Online Computing Reviews Service*

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V. Balasubramanian:	Helen Ashman	M. Turoff
	Alf Bashian	Murray Turoff
	Mark Bernstein	David Ullman
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Relevance scale

1 Link analysis: Sic transit gloria telae: towards an understanding of the web's decay

Ziv Bar-Yossef, Andrei Z. Broder, Ravi Kumar, Andrew Tomkins

May 2004 **Proceedings of the 13th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(248.69 KB) Additional Information: full citation, abstract, references, index terms

The rapid growth of the web has been noted and tracked extensively. Recent studies have however documented the dual phenomenon: web pages have small half lives, and thus the web exhibits rapid death as well. Consequently, page creators are faced with an increasingly burdensome task of keeping links up-to-date, and many are falling behind. In addition to just individual pages, collections of pages or even entire neighborhoods of the web exhibit significant *decay*, rendering them less effect ...

Keywords: 404 return code, dead links, link analysis, web decay, web information retrieval

2 Automated techniques for managing collections: Managing distributed collections: evaluating web page changes, movement, and replacement

Zubin Dalal, Suvendu Dash, Pratik Dave, Luis Francisco-Revilla, Richard Furuta, Unmil Karadkar, Frank Shipman

June 2004 **Proceedings of the 4th ACM/IEEE-CS joint conference on Digital libraries**

Publisher: ACM Press

Full text available: pdf(329.43 KB) Additional Information: full citation, abstract, references, citings, index terms

Distributed collections of Web materials are common. Bookmark lists, paths, and catalogs such as Yahoo! Directories require human maintenance to keep up to date with changes to the underlying documents. The Walden's Paths Path Manager is a tool to support the maintenance of distributed collections. Earlier efforts focused on recognizing the type and degree of change within Web pages and identifying pages no longer accessible. We now extend this work with algorithms for evaluating drastic changes ...

Keywords: change detection, collection management, document location

3 Ubiquitous WWW: Implementing physical hyperlinks using ubiquitous identifier resolution